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ABSTRACT

A questionnaire study was conducted to gather in-depth comparative data on job training practices in the Department of Defense (DOD), commercial business/institutions/industries (B/I/I), and proprietary trade/technical schools (T/TS). Detailed questionnaires requesting information on the management, conduct, and costs of twelve high-priority job training courses having military and civilian counterparts, were sent to the training managers/directors of thirty-three T/TS, twenty-nine B/I/I, and twenty DOD schools. Of a total of 134 questionnaires mailed, 84 were returned; 41 with usable data (24 from DOD and 17 from T/TS). All B/I/I reporting indicated that they no longer train in the course selected for study. Simple means and percentages comparing DOD and T/TS courses were calculated on the data provided in the 41 questionnaires. Based upon the findings detailed in this report, it was concluded that (1) job training, as conducted in DOD schools, is more job-performance oriented, and evaluation is more objective; (2) student/instructor ratios are similar; and (3) considering that the average DOD course employs approximately four times as many instructors to graduate eleven times as many graduates, DOD school productivity exceeds that of T/TS. (The questionnaire is appended.) (Author/CSS)

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COMPARING MILITARY & CIVILIAN SKILL TRAINING: INSTRUCTION & PROGRAM EVALUATION

Burl B. Gray
John E. Taylor
Wendy J. McGuire

HumRRO
Final Report
FR-WD-CA-76-20

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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The work reported here was accomplished during the last quarter of 1976. A questionnaire study was conducted to gather in-depth comparative data on job training practices in DOD, commercial business/institutions/industries (B/I/I), & proprietary trade/technical schools (T/TS). Detailed questionnaires requesting information on the management, conduct, and costs of 12 high-priority job training courses having military and civilian counterparts, were sent to the training managers/directors of 33 T/TS, 29 B/I/I, and 20 DOD schools. Of a
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total of 134 questionnaires mailed, 85 were returned; 41 with useable data. (24 from DOD; 17 from T/TS.) All B/I/I reporting indicated that they no longer train in the courses selected for study. Simple means and percentages comparing DOD and T/TS courses were calculated on the data provided in the 41 questionnaires. Based upon the findings detailed in this report, it was concluded that: (1) job training, as conducted in DOD schools, is more job-performance oriented, and evaluation is more objective; (2) student/instructor ratios are similar; and (3) considering that the average DOD course employs approximately four times as many instructors to graduate 11 times as many graduates, DOD school productivity exceeds that of T/TS.

PREFACE

The research described in this report was conducted by the Human Resources Research Organization (HumRRO), Alexandria, Virginia, under contract No. MDA-903-77-C-0028 from the Office of the Assistant Secretary of Defense Manpower & Reserve Affairs. Colonel George P. Tilson, Director for Training, served as Contract Technical Officer.

The research was conducted by HumRRO Western Division at Carmel, California; Dr. Howard H. McFann, Director. The Principal Investigator for the research was Dr. Burl B. Gray.

The research team included Dr. John E. Taylor, who served as Project Coordinator and contributed to all phases of the research and writing of the final report, and Miss Wendy J. McGuire, who was responsible for project operations, including questionnaire mailing, telephone interviews, and data collection. Mrs. Maurlaine Jorgenson was responsible for the overall preparation of the final report manuscript.

The research team would like to express its appreciation to the people from both the military and civilian schools, whose response to the questionnaire and telephone interviews provided the data base for this research project. Also, they would like to acknowledge the efforts of Ms Jeannie Fites and LTC L.G. Junkmann from the OASD(M&RA) office, whose assistance contributed to the outcome of this project.

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SUMMARY

PURPOSE

This study was conducted to gather in-depth comparative data on job-training practices across DOD schools, business and industry, and proprietary trade and technical schools. Major interest was in information on the management, conduct, and cost of such training.

METHOD

Twelve high-density job training courses in both the military and civilian sectors were selected for study. Detailed questionnaires were sent to the training directors/managers of a selected sample of military and civilian organizations involved in job training. Questionnaires were sent to: 33 trade/technical schools, 29 commercial companies/industries/institutions, and 20 DOD schools (9 Army, 4 Marine Corps,4 Air Force, and 3 Navy). Of a total of 134 questionnaires sent, 85 were returned. Of these, 24 from DOD schools and 17 trade/technical schools contained useable data. No commercial companies provided data, all reporting that they do not train in these courses.

The data on the returned questionnaires were subjected to descriptive analysis and a comparison of practices between DOD schools and trade/technical schools was made.

FINDINGS

The calculation of simple means and percentages from the data provided in the DOD and trade/technical school questionnaires indicated that training management, conduct, and other practices in the courses studied are as follows:

Management

1. Trade/technical schools (T/TS) and DOD schools reported data differing along several dimensions.

	DOD	T/TS
Course Length (weeks)	13	38
Course Length (hours)	462	1059
Student Class Size	26	21
Annual Student Output	877	78
Number of Instructors	30	8
Number of Administrators/Supervisors	3.5	2.2

2. Calculations based upon the data for equivalent course titles yielded similar student/instructor ratios. The DOD ratio is 10.3:1 and the corresponding T/TS ratio is 15.7:1.

Conduct

3. DOD schools reported devoting approximately 12% of the instructional time to lectures; T/TS reported devoting approximately 27% to lectures.

4. In evaluation of courses, instructors, and students, T/TS indicated a leaning toward subjective opinions, written observations, and instructor judgements; DOD schools reported leaning toward formal reviews, check lists, and the results of performance and written tests.

5. Differing attrition rates were reported. DOD courses experience 9%; T/TS courses experience 18%.

Costs

6. Little useable information was provided by either group of respondents, therefore a comparative cost analysis was not carried out.

CONCLUSIONS

Considering the limits imposed upon our data by the small number of useable questionnaires, we believe the available evidence supports the following tenative conclusions.

1. Job training, as conducted in DOD schools, is more job-performance oriented; evaluation is more objective.

2. Student/instructor ratios are similar.

3. Considering that the DOD courses studied employ approximately four times as many instructors to graduate 11 times as many students as do T/TS courses, DOD productivity exceeds that of trade and technical schools.

INTRODUCTION

OBJECTIVE

This study was undertaken for OASD(M&RA) to gather comparative data on current practice in the management, conduct, and costs of initial skill training (job training) across several of the major institutions which provide such training - DOD, business and industry, and private trade/technical schools. The gathering of such data was undertaken to provide OASD(M&RA) with information for comparing its own job training management procedures, instructional practices, and training output/cost ratios with those of counterpart civilian training programs.

BACKGROUND

With personnel costs increasing and now exceeding 50% of the military budget, there is keen interest in improving the cost-effectiveness of all facets of military manpower acquisition, training, utilization, and retention (1, 2, 4). Formal military individual training and education for officers and enlisted personnel presently requires an annual expenditure in excess of six billion dollars. In manpower terms these activities involve about one-sixth of all military personnel as students, instructors, and support personnel (2). An important component of this individual training is enlisted initial-skill training. This is the training given after recruit training, to provide enlisted personnel with the initial skills and knowledge required for entrance into a specific military job. In FY 77, 546,000 service personnel are projected to undergo such training in over 600 courses (5).

Such a significant block of activity and financial commitment raises concern about the cost-efficiency of such operations (4). Since many of DOD's initial-skill training courses have civilian counterparts, comparative observations between the two are natural.

The civilian sector employs many different kinds of training and educational settings which pursue a variety of objectives. These include colleges, public vocational education, business and industrial training schools, and technical and trade schools. The drawing of simple macro comparisons across job training institutions is a difficult undertaking. However, such comparisons have been made. Some have looked at cost-efficiency outcomes between college programs and military initial-skill training schools for the purpose of ascertaining student/instructor ratios (3). Others have looked at public vocational education courses and military job training for the purpose of assessing the feasibility of contracting with civilian training institutions for equivalent military job training (4).

Unfortunately, such comparisons have contributed to a confusing picture. College courses, which are mainly lecture, and not job-oriented, cannot be considered equivalent to military initial-skill training courses which are mainly non-lecture and have different objectives. Comparison of student/instructor ratios between these courses has been misleading. In a similar fashion, comparisons of costs in public vocational training classes, which are frequently after-hours and use extant facilities, with military initial-skill training classes, which operate in a much different setting, have led to misleading conclusions (3).

It would appear that the validity of comparative analyses of military job training and civilian job training would be enhanced if the compared courses and training situations were reasonably similar. Business and industrial training courses and proprietary trade and technical school courses are specific and job related, and appear to have more in common with military initial-skill training courses than either college or public vocational education classes.

The importance of job training to the effectiveness of the armed forces cannot be questioned. To aid DOD in achieving efficiency in the conduct of its initial-skill training, it is important that it have at its disposal accurate and valid data which reflect legitimate comparative analysis between military training and equivalent civilian training situations.

RATIONALE

This study was undertaken to develop a more in-depth cameo analysis of specific parallel training practices in non-military programs for comparison with equivalent DOD practices - to probe beneath the gross statistical comparisons that are typically made.

It has been reported that extensive equivalent job training is being conducted in the private sector by commercial companies in business and industry and by proprietary trade/technical schools (6). It was these private training resources that OASD(M&RA) chose to compare with DOD training schools.

Therefore, a comparative analysis of training practice between private sector and DOD schools was carried out. This analysis was designed to look at initial-skill training to determine how it is managed and conducted and what it costs.

METHOD

APPROACH

Training courses for 12 high-density jobs known to have military/civilian counterparts were selected for study. The 12 were selected to represent a range of skill complexity, instructional time, and resource requirements. Each one led to a sub-professional, non-degree-requiring job for which only vocational/technical preparation is necessary. Each was taught in both the military and civilian sectors. Job equivalence was accomplished across the institutions to be queried by cross-matching job descriptions as carried in Dictionary of Occupational Titles (DOT) codes (7) and in military occupational codes. (16)

Table 1 lists the 12 courses selected for study by their DOT job titles and codes. It was decided that a mailed questionnaire would be the most efficient data gathering instrument, in light of the time and funding available for the study. Accordingly, a questionnaire was specially designed to obtain information on overall training management, conduct, and costs for each job training course. It was constructed to obtain detailed data in five different areas: 1) Description and Conduct of Course; 2) Development of Training; 3) Method of Course Evaluation; 4) Evaluation of Students; 5) Cost Allocations. A copy of the questionnaire appears in the appendix.

The original project design made provision for a follow-up interview with selected respondents if it was found to be necessary, in order to check on the reliability of the questionnaire responses or to resolve problems.

TABLE 1. JOB COURSES SELECTED FOR STUDY

DOT JOB TITLE	DOT NUMBER
Aircraft Mechanic, Electrical & Radio	825.381
Airframe & Powerplant Mechanic	621.281
Automobile Mechanic	620.281
Bulldozer Operator	850.883
Civil Draftsman	005.281
Clerk-Typist	209.388
Dental Assistant	079.378
Digital Computer Operator	213.382
Industrial Truck/Forklift Operator	922.883
Medical Lab Assistant	078.381
Stock Control Clerk	223.387
X-Ray Clerk	079.368

ORGANIZATIONS QUERIED

The respondents for the study were selected from the three classes of institution: (1) commercial civilian companies, industries, or service institutions, (2) proprietary trade and technical schools, and (3) military service schools. The latter group was sub-divided into Air Force, Army, Navy, and Marine schools.

A total of 134 questionnaires were sent to the job course training directors or managers of the respective organizations. Questionnaires were sent to representatives of 33 trade and technical schools, 29 commercial companies, and 20 DOD schools.

As a general rule, we attempted to elicit information about each training course from four commercial companies, four proprietary schools, and four DOD schools. Further, we attempted to reduce the workload on each of the respondents by asking them for information on no more than two of their courses. Some departures from this planned "four by two" model were required, because some organizations taught only one course, some courses were taught at only one or two DOD school sites, or, as in the case of the Navy, Memphis proved to be the site of administrative control for almost all of the courses.

Follow-up telephone calls were made to each addressee to insure receipt of the questionnaire by the appropriate official, to resolve problems, and to encourage their timely execution and return of the questionnaire.

DATA REQUESTED

There were three types of information sought in the questionnaire: management, conduct of instruction, and cost data. In the *management* area we were attempting to ascertain the nature of the management structure and the course demographics, with respect to training. Who are the decision makers; where are they in the administrative/management structure of the organization? How big is the instructional staff? What data are used in course management decisions? How is the course updated and revised?

The second type of data involved *conduct of instruction*. The ultimate cost and effectiveness of training can be affected to a large extent by the method of instruction which is employed. Computer assisted methods may have a very high front end cost, but in the long run they may train more students to a higher level of proficiency. Simulation methods may considerably reduce the overall cost of training. These and similar considerations can affect the student-instructor ratio, student proficiency, and overall instructional cost. We sought information on how the course content was developed, on training methods employed, and on how evaluation was conducted.

The third area was *cost allocations*. There are numerous strategies for breaking out costs. Each one highlights certain aspects and tends to obscure others. Costs may be overt - such as the cost of equipment, text books, and instructors' salaries. Or, they may be covert - such as the costs of facilities and administration, or the costs incurred by keeping a student out of productive employment in order to train/retrain him. Our cost data questions were geared to provide us with basic cost/student output information.

DATA RECEIVED

A total of 63% of the questionnaires were returned within the time which was available for the study. Of these, 25 were from military service schools, 32 were from business and industry and 24 were from trade/technical schools. There were four refusals to cooperate and on one occasion, the questionnaire apparently was not delivered. The returns from business and industry were striking in their paucity of data. *Without exception,* business and industry representatives informed us that they either did not train personnel for these particular jobs any more, or that if such training was carried out somewhere within the company, they were not sure where. A number of these individuals who phoned to explain their negative responses, informed us that their companies now hire people ready-trained in these jobs. Their main source is trade/technical schools.

Table 2 is a response matrix showing the questionnaire return pattern by course title and by institution. Each cell in the matrix represents one training course to which a questionnaire was sent.

Of the 41 respondents who reported useable information, 23 of these did not report useable cost data. Various reasons were given: many kept no cost figures at all, some had cost figures categorized differently from the questionnaire, and two DOD sources cited regulations prohibiting their disclosing such information. Other DOD and T/TS schools apparently preferred to respond with NA (not applicable) instead of revealing their cost figures.

The response rate for this questionnaire was about as expected for such studies. Undoubtedly, the return rate could have been increased had there been more time for the respondents to prepare their responses, and had there been time to follow up and conduct personal interviews with the individuals who were providing incomplete information. The returned questionnaires were received so close to the due date for the project report, that interview trips were not of practical value. These conditions should be kept in mind when considering the data analysis and findings.

TABLE 2. QUESTIONNAIRE RESPONSE MATRIX: Each cell represents one course.

	D O D				T / T S				B / I / I				
DRAFTSMAN	X	O	N	N	R	X	O	X	O				
AUTO REPAIR	X	X	X		X	X	X	R	O		O		
AVIONICS MECHANIC	X	X				X	X		O		O	O	
FORKLIFT OPERATOR	X	X	X	N			O		O	O	O		
CRAWLER TRACTOR OPER.	X	X		N			O		O	O	O		
CLERK TYPIST	X	X	X		X		X	X	O	O	O		
STOCK CONTROL CLERK	X				O	O	O	O	O				
AIR FRAME MECHANIC		X		N			X	X	O		O	O	
COMPUTER OPERATOR	X	X			X	X		N	O	O	O		
DENTAL ASSISTANT	X		X	N			X	X	O	O	O	O	
LABORATORY ASSISTANT	X		X	N				X	O	O	R	O	
X-RAY ASSISTANT	X		X	N				N	O	O	O	R	

CODE:
- X = Questionnaire filled out with useable data
- O = Questionnaire returned because course not taught
- R = Refusal to cooperate
- Blank = Questionnaire not returned (reason unknown)
- N = Questionnaire not sent (no course available)

DATA ANALYSIS

The study's original analysis plan called for an unfolding analysis. This would have proceeded from the global to the specific; from the most collapsed presentation of data to a detailed shred-out along the several dimensions of the questionnaire; institution by institution, and course by course. That plan was modified in view of the fact that the data returned was modest, with no technical information at all from commercial companies, and little useable cost data from anyone. Since the Ns were small and there were a large number of empty cells in the data matrix, all DOD questionnaires were pooled into one set, and all trade/technical questionnaires into a second set. The analysis was confined to the calculation of simple means and percentages. The results section presents simple comparisons of management and course conduct practices between DOD schools and trade/technical schools.

The data are presented in two arrays. The first presents mean scores and percentages collapsed across all job courses for DOD schools and the trade/technical schools. The second array presents a comparison between selected specific matched courses for the reporting DOD schools and the reporting trade/technical schools. This second array presents data for three courses: Auto Mechanic, Computer Operator and Avionics Mechanic. There were 10 specific points of comparison. These were grouped under one of four major headings; course demographics, training methods, staffing, evaluation.

RESULTS & DISCUSSION

MANAGEMENT

Course operation, staffing, and content decision making areas are included under the management heading. There are 15 questions which relate to these three areas. Table 3 presents the results for both DOD schools and for trade/technical schools.

Items one through ten deal with course operation or demographics. Inspection of the responses for these items reveals some salient points.

The first is that trade/technical schools' courses are much longer in terms of calendar time. However, simple division shows that students in the military schools spend 27% longer in class per week than do those in trade/technical schools. The military schools convene class 35.5 hours per week whereas the trade/technical schools convene class for 28 hours per week. The number of hours per course is twice as large in the trade/technical schools as in the military schools. Evaluation of this is difficult. Longer or shorter class time can only be evaluated in light of student proficiency levels (training effectiveness). The assessment of graduating student proficiency between two or more similar courses poses a complicated technical evaluation problem. The scope of such an undertaking exceeded the limits of this study. Therefore, information on comparative course effectiveness will have to await further study.

A second point is that the military schools maintain a much more massive training program than the trade/technical schools. The average annual student input is almost 11 times greater for the military courses. In that same vein, military schools begin six times as many classes per course per year. In addition, the average military class size is 24% larger.

We note that the trade/technical schools have been teaching their courses 50% longer than the military schools. The amount of time devoted to OJT is small for both DOD and T/TS. Trade and technical schools tended to do more OJT than did DOD schools.

TABLE 3. MANAGEMENT DATA

		DOD	T/TS
COURSE OPERATION			
1.	Course length in weeks (average)	13	38
2.	Total number of academic class hours (average)	462	1059
3.	Average annual student input	984	92
4.	Average annual student output	877	78
5.	Number of classes starting in this course/year	45	8
6.	Average starting class size	26	21
7.	Range of starting class size: Largest to Smallest		
	DOD: 46 / 15 — T/TS: 32 / 14		
8.	Number of years this course has been taught	12	18
9.	Students training full time: YES / NO		
	DOD: 100 / 0 — T/TS: 96 / 4		
10.	If course is partly OJT, percent of time devoted to OJT	1%	8%
COURSE PERSONNEL			
11.	Average number of actual primary instructors assigned per year	27	7
12.	Average number of assistant instructors (peer tutors, coaches, teacher's aides, etc.) assigned per year	3.1	1.1
13.	Average number of the following overseeing this course per year: Program Administrators	1.1	1.1
	Supervisors	2.4	1.1
	Managers	1.5	.4
14.	Average number of support people servicing this course per year (maint., med., housing, clerical)	7.5	3.3
CONTENT DECISION			
15.	Major decision maker on course revision/content:		
	Administrator	43%	65%
	Supervisor	35%	24%
	Primary Instructor	4%	35%
	Committee	43%	18%
	Outside Expert	0%	6%
	Other	35%	29%

Items 11 and 12 deal with the number and allocation of actual instructors and other teaching personnel. The finding here is that military courses employ nearly four times as many instructional staff as do the trade/technical school courses.

Items 13 and 14 present the number and distribution of nonteaching personnel who are involved with the course. It can be seen that the military courses generally have twice as many administrative and support people.

Item 15 presents some interesting data which deal with the level at which course content decisions are made. The military schools show a rather even decision making process distributed among administrators, supervisors, and some type of committee, with practically no involvement of the primary instructor. On the other hand, the trade/technical schools invest the majority of their decision making in the administrator. The rather broad based decision making process used by the military schools may be due in part to the sheer size of the teaching operation itself.

The most important information to be gained from this section of the questionnaire comes from the results of two different computations. The first is the student/instructor ratio. This has become a popular referent considered by many to reflect efficiency. Because of the popularity of this particular ratio, we elected to obtain our data from direct telephone interview, since the questionnaire responses could be interpreted in several ways.

Many trade/technical schools reported that one instructor was assigned per class, regardless of the type of instructional activity. That is, lecture, demonstration, and hands-on training all utilized the same student/instructor ratio.

The military situation is somewhat more complex. Previous reports have put the ratio at anywhere from 1:1 up to 5:1 (3, 5). However, unlike the trade/technical schools, the ratio varies widely in the military setting depending upon the particular phase of instruction. Based upon our telephone interviews, we found that for lecture classes, the ratio could be as high as 24:1. In demonstration it was about 10:1, and for hands-on training it was 5:1 or less. Many courses spent time in each of the three activities. Therefore, we calculated a weighted mean average student/instructor ratio for those courses in order to arrive at a course average. Table 4 presents ratios by equivalent course title for both military and trade/technical schools. Since the student/instructor ratio varies widely between course titles we restricted our comparison along two dimensions. First, only courses of equivalent course title would be used in a comparison. Second, only data which could be confirmed by telephone interview would be included. As a result we had seven course title comparisons which could be made. These are the ones presented in Table 4.

TABLE 4. STUDENT/INSTRUCTOR RATIO BY COURSE FOR MILITARY AND TRADE/TECHNICAL SCHOOLS

	DOD	T/TS
Clerk Typist	16:1	15:1
Auto Mechanic	10.6:1	19.4:1
Avionics	8.6:1	20:1
Air Frame	6.7:1	20:1
Draftsman	7:1	12:1
Computer Operator	8.5:1	6:1
Laboratory Technician	15:1	17.5:1

It may well be that the nonflexibility of the trade/technical schools in adapting the student/instructor ratio to the teaching situation could be contributing to the fact that the trade/technical schools take so much longer to complete a course. If that were the case, then the smaller ratio would be interpreted as an instructional advantage rather than as a liability. Obviously, there is much opportunity for confounding of data and multiple conclusions with this ratio.

The data from Table 4 were averaged. The average student/instructor ratio for the military schools was 10.3:1 and for the trade/technical schools was 15.7:1. This situation is portrayed in Figure 1.

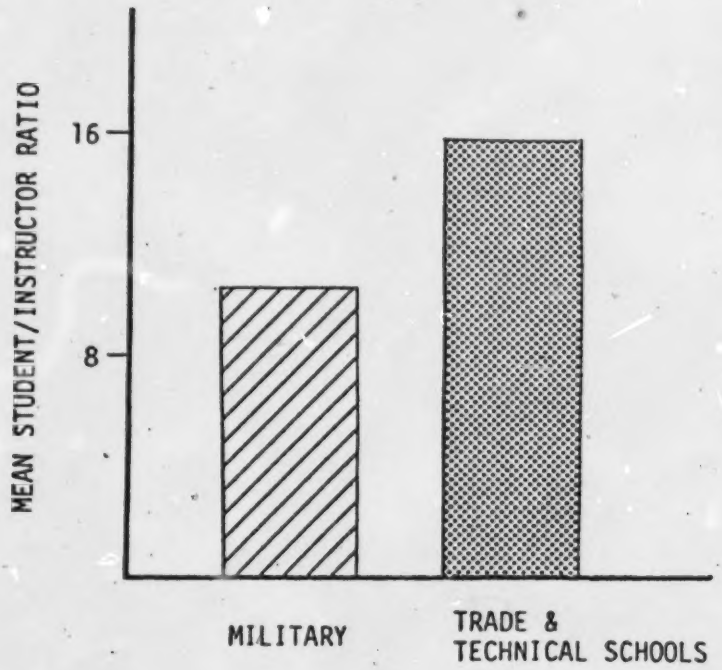

Figure 1. Mean Student/Instructor Ratio

We think that an alternate computation is more appropriate to the circumstances and more relevant to the issue of instructional productivity.

This alternate computational finding follows from the first. In Table 3 it was seen that for the military almost four times as many instructors turned out 11 times as many students. Thus, each instructor in the military represented an output of approximately 29 students, while his trade/technical school counterpart represented an output of approximately 10 students. It can be argued that the military makes 2.9 times more productive use of extant staff than do the trade/technical schools. This situation is graphically presented in Figure 2.

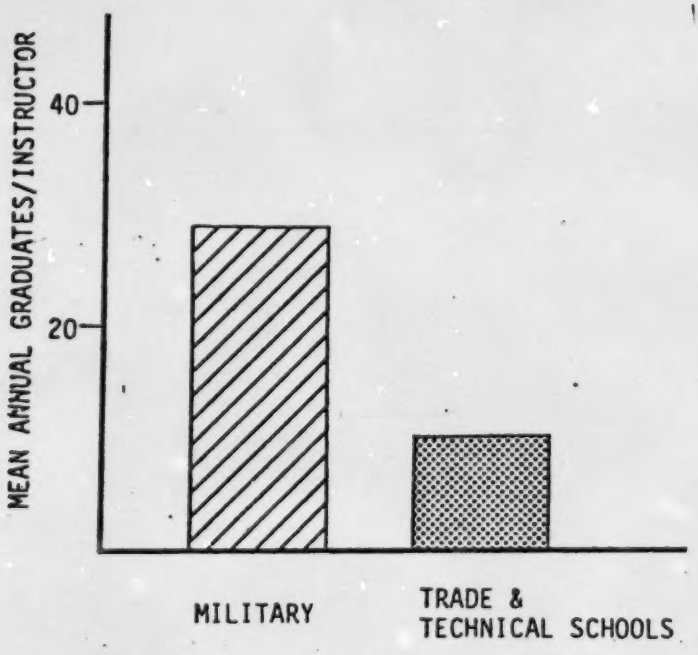

Figure 2. Mean Annual Graduates/Instructor

The management data can be distilled into two basic functional findings: One is the student/instructor ratio, and the other is the instructor/annual student output ratio. Each of these ratios can be considered to be an index of instructional productivity with the second ratio providing a more stable measure of utilization of staff resources.

The tradeoff for a responsive and flexible student/instructor ratio is an overall course ratio which is lower than that resulting from non-flexible instruction. The sheer size of the military operation demands a larger staff and more general administrative spread of responsibility. However, the dramatic difference found in the utilization of extant staff resources (Figure 2) points up the fact that the DOD's instructional productivity at this level certainly tends to neutralize whatever disadvantages are ascribed to the lower student/instructor ratio.

CONDUCT OF INSTRUCTION

This section includes training methods, development of training, and evaluation of training and students. Under development of training, we were attempting to get a picture of staff utilization in the development of each course. Table 5 presents some of the responses to this section of the questionnaire.

It appears from Table 5 that the trade/technical schools tend to involve the training staff to a greater extent in the development of the course. The military schools tend to utilize some of the training staff for job and task analysis and the development of instructional materials only. The trade/technical schools show a fairly even spread of staff involvement. This finding is consistent with the fact that DOD school organization provides for course development by specially trained course developers and subject matter experts from the field, leaving course conduct to instructors.

TABLE 5. DEVELOPMENT OF TRAINING

PERCENT OF TRAINING STAFF ASSIGNED TO EACH DEVELOPMENTAL ACTIVITY	DOD	T/TS
Job & Task Analysis to Determine Course Content	19	69
Development & Production of Instructional Materials	25	69
Development & Production of Media to Support Instruction	20	63
Development of Instruments for Assessing Student Achievement	16	66
Development of Quality Control Procedures for Assessing Course Effectiveness	16	60

Table 6 presents the questionnaire responses to the section on methods of training. Seven items addressed this issue.

The first observation in Table 6 is that the trade/technical schools report spending 2.3 times more time in lecture activities than do the military schools. In both cases however, lecture activities occupy less than one-third of the total instructional time.

Further examination of Table 6 shows that the trade/technical schools rely more on simulation and mock-ups and less on actual job equipment than do the military schools. The remainder of these responses show the two organizations to be similar in that they review their courses frequently, using a variety of sources of information.

TABLE 6. TRAINING METHODS EMPLOYED

	% OF TIME	
	DOD	T/TS
1. INSTRUCTOR-MEDIATED METHODS		
Classroom Lectures	12	27
Demonstrations (Visual & Oral)	7	10
Discussions & Seminars	4	5
Hands-On Skill Practice	63	50
• On Actual Job Equipment & Materials	60	37
• On Simulators or Part-Task Trainers	3	13
2. NON-INSTRUCTOR MEDIATED METHODS		
Programmed Texts	8	1
Audio-Visual Modules (Video tape recordings, tapes, films, slides)	3	6
Mock-Ups, Exhibits, Displays	0.5	2
3. OTHER	4	0.2
4. PURCHASED A PACKAGE COURSE		
Yes	4	6
No	96	94
5. LOCAL CIVILIAN TRADE/TECHNICAL ADVISORY GROUPS PARTICIPATED IN DEVELOPMENT OF COURSE		
Yes	9	44
No	91	56
6. COURSE HAS BEEN REVISED		
Yes	96	100
No	4	0
7. COURSE HAS BEEN REVISED ON THE BASIS OF:		
Feedback from Users of Graduates	91	88
Feedback from Graduates Themselves	86	94
Technological Change in the Job	86	100
Recommendations of Advisory Groups	76	69
Standing Policy to Update Instruct'n Periodically	81	88

The issue of lecture versus nonlecture activities has been a recurrent one in the literature (8, 9, 10, 11, 15). It has been variously cited as a necessary component of job training, as the cause of spurious student/instructor ratios, and as the reason for higher instructional costs in the military. Figure 3 portrays the proportions of non-lecture instruction as reported in the present study. It is apparent that both types of schools utilize extensive non-lecture instruction. The military schools report devoting a slightly larger amount of time to such instruction.

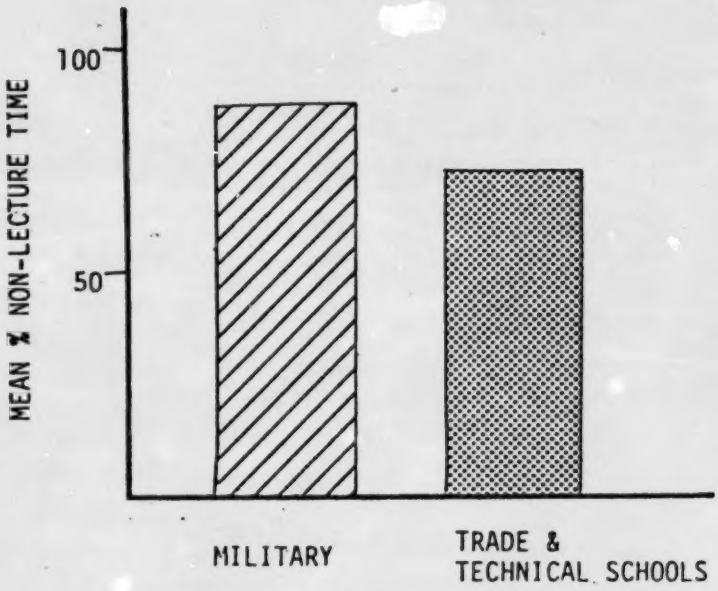

Figure 3. Mean Percent of Non-Lecture Time

EVALUATION

Eight major questions were posed with respect to methods of course evaluation. The items probed information about evaluation of the course content and materials, instructors, and students. Also, the issue of attrition was addressed in the eighth question. The responses to these items are presented in Table 7.

Both trade/technical and military schools tend to use a wide array of evaluation methods and data. Trade/technical schools tend to utilize subjective personal opinion, past experience, and written observations more than the military schools. On the other hand, the military schools tend to rely more on formal reviews, rating scales, check lists, and performance than do the trade/technical schools. The responses to item 7 indicate that student course grades in military schools appear to be based more on standardized and locally designed written and performance test results, whereas grades in trade/technical schools are based more upon instructor judgement and locally developed tests.

The responses to item 8 (attrition) show two trends. First, military schools experience about half as much attrition as do the trade/technical schools. Second, more military students are removed for poor work rather than electing to leave the course. On the other hand, similar numbers of trade/technical students elect to leave the course as are removed for poor work. This probably reflects the higher degree of personal control exerted by the military.

TABLE 7. COURSE EVALUATION

	% REPORTING	
	DOD	T/TS
1. How does your training staff evaluate tng materials?		
Personal judgement	62	94
Formal review	83	94
Subsequent job performance	83	81
Past experience	58	75
Institutional policy	54	56
Other	33	0
2. In the evaluation mentioned above, what data are used in making the decisions?		
Checklist	58	25
Student performance ratings	67	88
Student test scores	54	81
Written opinion	75	69
Other	46	31
3. Does your tng staff evaluate the course instructor?		
Yes	71	100
No	29	0
If so, by which of the following methods?		
Observation	100	100
Student Rating	53	81
Student performance	76	81
Written test	0	31
Seniority	24	13
Other	24	13
4. In the evaluation mentioned previously, what data are used in making the decisions?		
Rating scale	47	31
Test scores	35	19
Written observations	82	94
Supervisor report	71	94
Other	12	31
5. By which of the following methods does your staff evaluate course content?		
Personal judgement	54	81
Formal review	92	88
Subsequent job performance	79	75
Past experience	37	69
Institutional policy	37	38
Other	46	19

TABLE 7. COURSE EVALUATION (Continued)

	% REPORTING	
	DOD	T/TS
6. In the evaluation mentioned above, what data are used in making the decisions?		
Checklist	50	25
Student performance ratings	79	81
Student test scores	67	75
Written opinion	54	63
Other	54	31
7. What percentage of each of the following items is used in determining the student's course grade?		
Locally developed written examinations	35	24
Standardized written examinations	2	5
Locally developed performance tests of job skills	42	28
Standardized performance tests of job skills	19	12
Instructor judgements of student's proficiency	6	22
Peer judgements of student's proficiency	0	0.3
Other	0	9
8. What is the overall average attrition rate in this training course?	9	10
Of all the students in the course, what percent:		
Graduate	89	83
Are removed for poor work	6	5
Elect to leave themselves	0.3	6
Must recycle (remedial work) for graduation	3	1
Leave for medical reasons	1	2
Leave for other reasons	1	4

COST ALLOCATIONS

Cost of instruction is a recurrent theme which has engendered much controversy (1, 2, 3, 5, 6, 12, 13, 14). Though it was beyond the scope of the present study to completely investigate this issue in detail, we did hope to determine and compare the approximate costs of the training programs under study. The cost section included in the questionnaire provided cost categories which were fairly general and covered a broad range of budget allocation options.

Our returns indicated that few schools keep cost data for even the broad categories called for in the questionnaire. In fact, it appeared as if no two schools kept cost figures the same way. Thus, it became impossible to calculate basic cost figures which were equivalent across schools. Time limitations precluded on-site interviews with respondents in order to solve this problem. Therefore, cost calculations were not included in this report.

SINGLE COURSE ANALYSIS

It is apparent from looking at the different types of job courses which were included in the sample that a wide diversity of training situations and cost factors exists in the different training programs. This is mainly due to the nature of the training tasks themselves. The outcome is that our reported data collapsed across all job courses is reflective only of the general situation. In order to gain some perspective, we selected three job courses for which we had comparable between-school data, and compared questionnaire responses between the military and trade/technical schools.

These analyses involved the auto mechanic (3 DOD, 3 T/TS), computer operator (2 DOD, 2 T/TS) and avionics mechanic (2 DOD, 2 T/TS). The courses were compared on 10 specific points. These points were grouped under the following headings; course demographics, training methods, staffing, and evaluation. The organization of comparative points was as follows:

Course Demographics

1. Course Length
2. Student Output
3. Classes Per Year
4. Class Size

Training Methods

5. Lecture/Non-Lecture

Staffing

6. Instructors Assigned
7. Support People

Evaluation

8. Course Evaluation
9. Student Evaluation
10. Instructor Evaluation

The equivalency of the courses was ascertained by a cross referencing procedure. The Dictionary of Occupational Titles (7) from the Department of Labor was used to obtain the DOT number for each course title. Then, using the DOT number and course description as the identifier, each course title was cross referenced with the Military-Civilian Occupational Source Book (17) for each of the service branches. In this way similar course titles and descriptions were selected on the basis of these published reference guides.

AUTO MECHANIC

The auto mechanic designation was DOT No. 620.281 and the USOE cluster was "transportation". The composite service job statement was:

> Inspects, maintains, and repairs internal combustion engine power vehicles. Analyses malfunctions by visual and/or auditory examination, operation, and use of appropriate test equipment. Removes, replaces, repairs, and overhaul vehicle systems such as mechanical, electrical, air conditioning, fuel-air, anti-pollution, and emission control systems, power train, brakes, steering, and suspension systems. Performs preventive and special maintenance. (17)

We had data from three DOD and three T/TS courses for this comparison. The data were summed and averaged for both the DOD and T/TS courses, such that we had two sets of average questionnaire responses, one for the DOD and one for the T/TS courses. These two sets of averaged questionnaire responses were then used in the point-by-point comparison.

Course Demographics. The general description of the course was pointed out in the data by the following items:

		DOD	T/TS
1.	Course Length (weeks)	13	39
	Course Length (hours)	361	1137
2.	Student Output Per Year	1415	170
3.	No. of Classes Per Year	71	10
4.	Class Size	17	28

The course length for auto mechanic was quite similar to the overall response on the questionnaire for the 12 courses. A division of hours by weeks shows that for the auto mechanic, the DOD spent 28 hours per week in class and the T/TS spent 29 hours. This does differ from the general response in that overall, the DOD typically spent more hours per week in class than did the T/TS courses.

The figures on student output and number of classes per year indicate that the DOD maintains a much larger training operation than does the T/TS. This is not unexpected. From the last item it can be seen that the T/TS class size is larger than the DOD. This situation is just reversed from the general findings presented in the report. Not only is the direction of the difference reversed, but the magnitude of the difference is greater.

Training Methods. Six different types of training methods were compared in the auto mechanic course. They were as follows:

	DOD	T/TS
5. Percent course instructional time spent in:		
Lecture	15	21
Demonstration	23	11
Simulation	0	28
Job Equipment	59	38
Mock-Ups	3	8
OJT	0	0

The T/TS courses utilized more class time for lecture than did DOD. This outcome may explain part of the course length differential discussed above, but it is speculation. The DOD appeared to invest course time in demonstration and actual job equipment whereas T/TS spent its course time in lecture, job equipment, and simulation. An interesting contrast is that DOD spent no time in simulation whereas T/TS spent its second largest time block there. Finally, neither DOD nor T/TS utilized mock-ups or OJT to any large extent.

Staffing. Two major questions were asked in this section. They were:

	DOD	T/TS
6. No. of primary and assistant instructors assigned to the course	70	13
Student/Instructor ratio	11:1	19:1
No. of graduates per instructor	20	13
7. No. of support people per course: Administration & Supervision	10	3
Support	8	3

The large number of instructors assigned to the course for DOD relative to T/TS reflects the overall size of the training operation which is carried by DOD. The student/instructor ratio for the DOD is similar to that reported for the general data in the report. However, the T/TS ratio is much higher for the auto mechanic than the corresponding DOD index or the general report finding for T/TS courses.

This may well be due to the fact that in #5 above, T/TS spends more time in lecture and simulation than does DOD. The graduates per instructor difference reflects a DOD advantage which is similar to the one reported in the general data. With respect to both administrative and support personnel DOD reports about three times as many persons as does T/TS.

Evaluation. There were three items under the evaluation heading.

	DOD	T/TS
8. Who is the major decision maker with respect to course revision: (percentage marking each item)		
Administrator	33	100
Supervisor	67	67
Instructor	0	67

9. Student Evaluation:

DOD used local and standardized written and performance tests.

T/TS used the same as DOD in addition to more personal judgement and past experience

10. Percentage Course Attrition:	4	38
Poor work	1	11
Elected to leave	0	5
Unknown reason	2	16
Other categories	1	4

In the DOD the supervisor appeared to play the greatest role in decisions about the course and course revision. The administrator participated somewhat and the instructor did not have much effect on the decision. In the T/TS the administrator was the major decision maker with both the supervisor and the instructor participating at similar levels. DOD tended to do a more formalized review than T/TS. On the other hand, T/TS relied more heavily on past experience and personal judgement.

The topic of attrition shows some interesting divergencies from the general data. First, the DOD attrition was lower for the auto mechanic than the DOD general data indicated. Second, the attrition for the T/TS was almost double the figure reported in the general data and nearly ten times greater than the corresponding figure for DOD.

In summary, DOD courses appeared to have shorter classes with fewer students per class, more job equipment and demonstration class activities, a smaller student/instructor ration, more support people per course, and more graduates per instructor. DOD's course evaluation tended to rest with the supervisor. Student evaluation was based upon written and performance tests. Attrition was not high, and showed no particular causal indicator.

The T/TS courses appeared to have much longer training time with larger classes composed of job equipment training, simulation, and lecture. There were few reported support persons per class and a large student/instructor ratio, with a relatively low number of graduates per instructor. Administration made the major contribution to course decisions, with supervisors and instructors both participating an equal amount. Student evaluation was based upon performance and written tests, in addition to the personal judgement of the instructor and past experience. Attrition was fairly high, with the largest single categories being poor work and unspecified reasons.

COMPUTER OPERATOR

The computer operator designation was DOT No. 213.382 and the USOE cluster was "Business and Office". The composite service job statement was as follows:

> Perform any one or a combination of the following: Operates and controls electronic digital computer to process business, scientific, engineering or other data according to operating instructions. Sets control switches on computer and peripheral equipment such as external memory, data communicating, synchronizing, input and output recording or display devices, to integrate or operate equipment according to program, routines, subroutines, and data requirements specified in written operating instructions. Selects and loads input and output units with materials such as tapes or punch cards, and printed forms for operating runs. Confers with technical personnel such as systems analysts, data systems engineers, and programmers concerning machine capability and operations. Types alternate commands into computer console according to predetermined instructions to correct error or failure and resume operations. Notifies supervisor of error or equipment stoppage. (17)

Our data came from two DOD courses and two T/TS courses. The data were average for both DOD and T/TS in a manner similar to that described for the auto mechanic.

Course Demographics. The five data items for this section obtained the following results:

		DOD	T/TS
1.	Course Length (weeks)	6	21
	Course Length (hours)	235	525
2.	Student Output Per Year	232	53
3.	No. of Classes Per Year	25	9
4.	Class Size	10	3

Course length follows the overall pattern found in this study wherein the DOD course was considerably shorter in weeks and hours of instruction than the T/TS course. The number of hours per week for the DOD was 39 and for the T/TS was 25. Thus, the amount of class time per week was quite a bit less for the T/TS course. Figures for student output and number of classes per year again reveal the larger DOD training operation. The last item, class size, shows a reversal. The DOD class has three times as many students per class as does the T/TS class. The general data show a slight tendency for DOD classes to be larger than T/TS classes, but not to the extent reported here.

Training Methods. The training methods questionnaire responses fell into one of seven categories for the computer operator.

	DOD	T/TS
5. Percent course instructional time spent in:		
Lecture	8	15
Demonstration	11	6
Simulation	0	2
Discussion	11	7
Job Equipment	48	40
Mock-Ups	0	3
OJT	20	0

With the exception of OJT the relationship of the data for DOD and T/TS is the same as it was for auto mechanic. Both courses rely heavily on job equipment. The DOD course tends toward demonstration while T/TS is more heavily weighted toward lecture. Both courses showed some time devoted to discussion for this course. The DOD course utilized demonstration and OJT slightly more than did T/TS and that is a slight change from the general data.

Staffing. There were two major items in this section.

	DOD	T/TS
6. No. of primary and assistant instructors assigned to the course	13	6
Student/Instructor ratio	9:1	6:1
No. of graduates per instructor	18	9
7. No. of support people per course: Administration & Supervision	4	3
Support	15	3

The number of instructors per course was much larger for the DOD as would be expected considering the overall size of the training operation. However, the student/instructor ratio is also larger for the DOD as is the number of graduates per instructor. These two findings together suggest a better student/instructor ratio in addition to greater productivity (no. of graduates per instructor) for the DOD than for T/TS. The general data and also the auto mechanic data showed a slight advantage in student/instructor ratio for the T/TS. However, in this course the situation appears to be reversed.

These data also show a larger figure for both administration-supervision and also for support persons for the DOD course than for the T/TS course. This pattern has been consistent within the general data and for the auto mechanic course also.

Evaluation. The last three items were in the area of evaluation.

		DOD	T/TS
8.	Who is the major decision maker with respect to course revision: (percentage marking each item)		
	Administrator	0	50
	Supervisor	0	0
	Instructor	0	0
	Committee	50	0
	Other	50	50
9.	Student Evaluation:		
	DOD used local and standardized written and performance tests, also feedback from employers.		
	T/TS used local written and performance tests, personal judgement, and user feedback.		
10.	Percentage Course Attrition:	5	18
	Poor Work	4	4
	Elected to Leave	0	5
	Other	1	9

There was a noticeable change in the pattern of major decision maker for both DOD and T/TS courses. The typical patterns that were seen for the general data and for the auto mechanic are not seen in these data. The only similarity is the heavy participation of the administrator for T/TS. Otherwise, it appears that course revision decisions are made outside of the usual group of persons who participate in such decision in other courses.

Student evaluation continued to show the same pattern as was seen in the auto mechanic course and in the general data. Generally, the DOD is characterized by a more formalized type of evaluation and the T/TS is characterized by an additional evaluation component which uses personal judgement. In the case of computer operator, both DOD and T/TS reported a more

pronounced tendency to use feedback from users of graduates than for other courses. Attrition was greatest for the T/TS, with a majority dropping out for a variety of unspecified reasons. The amount of attrition was the same as that reported for the general data. DOD attrition was somewhat less than the general data and much less than that for T/TS in this course.

In summary, this course for the DOD was characterized by shorter training time, more students, more classes, and larger class size. Heavy emphasis was placed on utilization of job equipment and some OJT. The DOD had a larger student/instructor ratio and more graduates per instructor. DOD had a greater loading of support staff. Course evaluation tended to be outside of the teaching-supervision-administration group. Student evaluation was similar to other courses, with the added emphasis on feedback from employers.

For the T/TS, the training was longer; although fewer hours per week were spent in class, there were fewer graduates and fewer classes with smaller class sizes. The greatest instructional emphasis was in working with job equipment and in lecture. The T/TS had a smaller student/instructor ratio and fewer graduates per instructor. Evaluation of the course was vested in the administrator and in other unspecified sources. Student evaluation was similar to other courses, with the addition of feedback from employers. Finally, the attrition was similar to that reported for other courses and also, much larger than that for DOD.

AVIONICS MECHANIC

This course had DOT No. 825.281 and USOE cluster "Transportation". The composite service job statement was as follows:

> Installs, inspects, troubleshoots, repairs, overhauls, and modifies aircraft electrical and electronic control systems, components, and associated electrical test equipment. Inspects voltage regulators, frequency and load controllers, control panels, anti-skid, nosewheel steering and starters. Replaces defective parts. Services and repairs batteries. Adjusts electrical devices such as voltage regulators and limit switches. Fabricates wiring assemblies. Disassembles

components such as starters, generators, and retracting motors. Conducts tests, using electrical and electronic test equipment such as voltmeter and ohmmeter to isolate malfunctions. Adjusts, aligns, and calibrates aircraft electrical systems using blueprints and technical publications. Checks installed and repaired electrical and electronic components to insure compliance with technical specifications . (17)

The data were from two courses in DOD and two in T/TS. The analysis was carried out in a manner similar to that for the other two single course analysis.

Course Demographics. The results for these four items were as follows:

		DOD	T/TS
1.	Course Length (weeks)	18	53
	Course Length (hours)	658	1535
2.	Student Output Per Year	398	40
3.	No. of Classes Per Year	39	2
4.	Class Size	14	17

Once again, course length for T/TS is much greater than for DOD. Hours per week for DOD is 41 and for T/TS is 29. Student output and number of classes per year reflect the larger scale of the DOD operation. Class size is a little larger in T/TS, but the difference probably is not meaningful.

Training Methods. The information on training is as follows:

		DOD	T/TS
5.	Percent Course Instructional Time Spent in:		
	Lecture	6	45
	Demonstration	2	2
	Simulation	4	20
	Job Equipment	46	21
	Mock-Ups	0	5
	OJT	0	0
	Programmed Texts	24	0

In view of the general data and previous single course analyses, the overall nature of these are not dramatically different. There are two interesting points. First, considering the course title, the amount of time spent in lecture for T/TS appears higher than expected. Second, the appearance of programmed texts as a major instructional component for DOD is new in terms of previous analyses. The remainder of course time was scattered through a variety of methods at low incidence levels. As in previous comparisons, the T/TS utilizes lecture and simulation to a greater extent than does DOD.

Staffing. There were two major items in this section.

		DOD	T/TS
6.	No. of primary and assistant instructors assigned to the course	33	4
	Student/Instructor Ratio	7:1	20:1
	No. of Graduates per Instructor	12	10
7.	No. of Support People Per Course:		
	Administration and Supervision	3	2
	Support	Unknown	4

The number of instructors assigned shows the same type of differential between DOD and T/TS as we have seen in all other analyses in this report. The student/instructor ratio shows a larger advantage for T/TS than is seen in the general data or in the previous single course analyses. Support people data is inconclusive, because of a lack of data on this topic from the military.

Evaluation. The final three items were as follows:

	DOD	T/TS
8. Who was the major decision maker with respect to course revision: (percentage marking each item)		
Administrator	0	50
Supervisor	0	0
Instructor	0	0
Committee	50	0
Other	50	50
9. Student Evaluation:		
DOD used local written and performance tests.		
T/TS used local written and performance tests in addition to personal judgement.		
10. Percentage course attrition	9	16
Poor Work	4	5
Elected to Leave	1	9
Other	4	2

Once again we see the T/TS course investing heavily in administrator decision concerning course revision and evaluation. In this instance neither DOD or T/TS relied on supervisors or on instructors, although they did rely on outside (unspecified) information. Student evaluation appeared to follow the same format as it has in the general and other single course analyses. Attrition also appeared to be fairly similar to other analyses.

All in all, this course did not appear to depart drastically from what we have seen before in this report. The DOD course was shorter, had larger student output, ran more classes and had a smaller class size. Training methods included job equipment and programmed texts (this was a change from previous findings in this report). The course had more instructors, smaller student/instructor ratio and unknown support people. Evaluation was more formalized and did not involve as much administrative or personal opinion. Finally, attrition was less than for the T/TS course.

The T/TS course evidenced longer course length, smaller student output, fewer classes per year and a larger class size. The course depended on lecture, demonstration and simulation in the instructional methods. The course had fewer instructors, a larger student/instructor ratio and fewer graduates per instructor. The administrator remained the major decision maker along with other unspecified help. Student evaluation included more personal judgement and course attrition was larger with the greatest percentage electing to leave.

CONCLUDING REMARKS

As a final observation on the study per se, we feel that the comparative situation as presented in the three figures is representative of the situation as it was presented through the questionnaire and telephone responses. This report highlights the fact that it is imprudent to make a special isolated issue out of one statistic or index comparison between military and civilian schools.

One very consistent theme throughout the data was the much longer course length for the T/TS courses. There are several options for evaluating this outcome. First, if the directory sources we used are valid in terms of equating output of training, then one can conclude that the T/TS course is just not as efficient. Evidence could be found in the longer lecture and discussion times for T/TS as opposed to the job equipment and hands-on training of the DOD. Also, graduates per instructor would be a secondary datum which would lend additional support. On the other hand, if one disregards the overall equivalency of the courses as matched up by the catalogues we used then, the issue becomes one of asking the question "What is the training output of DOD and T/TS courses?" The thought here would be that T/TS by virtue of their longer training period either trained students "better" or gave them more extensive skills.

It would appear to us that this second position would require some evidence that the catalogues which were used did in fact not match up courses of equivalent content. This would next lead to a study to determine exactly what the proficiency of each type of graduate was from DOD and T/TS courses. Such an undertaking was quite beyond the present study, therefore we elect to utilize our method for selecting courses as described in this report until better information is available.

To us, on the whole it did not appear that the military or the trade/technical schools, either one, demonstrate a highly dramatic overall advantage over the other in instructional management, course operation, evaluation , or staffing. Usually, any one particular advantage tended to be offset by other, less complimentary comparisons.

Most of the issues raised in this study deserve individual attention through extended research efforts. A broad based study, such as this, can only serve to highlight trends and to sketch out the general situation. It is to be hoped that our findings will encourage further exploration into this important topic.

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APPENDIX

JOB-TRAINING QUESTIONNAIRE

JOB TRAINING QUESTIONNAIRE

HumRRO/DOD Project No.

I. DESCRIPTION & CONDUCT OF COURSE

A. Job Title & Course Demographics

1. *Job Title:

2. Course Demographics: Please fill in the following blanks with the appropriate numbers.

a. Course length in weeks _____

b. Total number of academic class hours _____

c. Average annual student input _____

d. Average annual student output _____

e. Number of classes starting in this course per year _____

f. Average starting class size _____

g. Range of starting class size: Largest ____ to Smallest _____

h. Number of years this course has been taught _____

i. Are the students full-time in training Yes___ No _____

If not, what percent of their time is devoted to training in this course ? _____

j. If the course is partly on-the-job, what percent of the time is devoted to O-J-T ? ___

B. Training Methods Employed in This Course

Please fill in the following blanks with the appropriate percentages. Course instructional time is distributed approximately as follows across:

1. Instructor-Mediated Methods	% of Time
a. Classroom lectures	_____
b. Demonstrations (visual & oral)	_____

* Dictionary of Occupational Titles, Department of Labor

	% of Time
c. Discussions & seminars	_____
d. Hands-on skill practice	_____
(1) on actual job equipment & materials	_____
(2) on simulators or part-task trainers	_____
2. Non-Instructor Mediated Methods	
a. Programmed texts	
b. Audio-visual modules (vidio taperecordings, tapes, films, slides)	_____
c. Mock-ups, exhibits, displays	_____
3. Other (Specify: _____)	_____
	100% TOTAL

C. Staff Assigned to This Course

Please fill in the following blanks with the appropriate numbers Prorate and use fractions as necessary.

1. Average number of actual primary instructors assigned per year _____

2. Average number of assistant instructors (peer tutors, coaches, teachers aides, etc.) assigned per year. _____

3. Average number of the following overseeing this course per year:

   a. Program Administrators _____

   b. Supervisors _____

   c. Managers _____

4. Average number of support people servicing this course (maintenance, medical, housing, clerical) per year. _____

II. DEVELOPMENT OF TRAINING

A. Was your training staff organized to accomplish the following activities during development of this course?

If your answer is "yes", indicate how many of your staff were assigned to each activity. Prorate and use fractions if necessary.

	Yes	No	% of Staff
1. Job & task analysis to determine course content	___	___	_____
2. Development & production of instructional materials	___	___	_____
3. Development & production of media to support instruction	___	___	_____
4. Development of instruments for assessing student achievement	___	___	_____
5. Development of quality control procedures for assessing course effectiveness	___	___	_____

6. What was the estimated cost for development of this course? _____

B. If your training staff was not organized as in item A above, were course development activities performed by the primary course instructor(s)?

Yes ____ No ____

If your answer is "yes", how many man-days were used in the development of this course?

_____

What was the estimated cost for development of this course? _____

C. If neither A nor B above apply, how were course developmental activities accomplished?

_____

_____

_____

_____

_____ _____

D. Did you buy a packaged course? Yes ____ No ____

If yes, what was the cost? _____

E. Did local civilian trade/technical advisory groups participate in development of this course?

Yes ____ No ____

F. Has this course been revised? Yes ____ No ____

If so, how often? Each year ___; Each 2 years ___; Every 5 years ___

G. Has this course been revised on the basis of:

	YES	NO
1. Feedback from users of graduates	___	___
2. Feedback from graduates themselves	___	___
3. Technological change in the job	___	___
4. Recommendations of advisory groups	___	___
5. Standing policy to update instruction periodically	___	___

H. If you do revise this course, who is the major decision-maker?

Administrator _____

Supervisor _____

Primary Instructor _____

Committee _____

Outside Expert _____

Other (Specify) _____

_____

III. METHODS OF COURSE EVALUATION

A. Does your training staff evaluate training materials? Yes ___ No ___

If yes, by which of the following methods?

Personal judgement ___

Formal review ___

Subsequent job performance ___

Past experience ___

Institutional policy ___

Other (Specify) ___

_____

1. In the evaluation mentioned above, what data are used in making the decisions?

Checklist ___

Student performance ratings ___

Student test scores ___

Written opinion ___

Other (Specify) ___

_____

B. Does your training staff evaluate the course instructor? Yes ___ No ___

If so, by which of the following methods?

Observation ___

Student rating ___

Student performance ___

Written test ___

Seniority ___

Other (Specify) ___

_____

1. In the evaluation mentioned in B, what data are used in making the decisions?

Rating scale ____

Test scores ____

Written observations ____

Supervisor report ____

Other (Specify) ____

_____

C. Does your training staff evaluate the course content used in this cours

Yes ___ No ___

If yes, by which of the following methods?

Personal judgement ____

Formal review ____

Subsequent job performance ____

Past experience ____

Institutional policy ____

Other (Specify) ____

_____

1. In the evaluation mentioned above, what data are used in making the decisions?

Checklist ____

Student performance ratings ____

Student test scores ____

Written opinion ____

Other (Specify) ____

_____

IV. EVALUATION OF STUDENTS

A. What percentage of each of the following items is used in determining the student's course grade?

	% of Grade
1. Locally developed written examinations	____
2. Standardized written examinations	____
3. Locally developed performance tests of job skills	____
4. Standardized performance tests of job skills	____
5. Instructor judgements of the student's proficiency	____
6. Peer judgements of the student's proficiency	____
7. Other (Specify: _____)	____
	100% TOTAL

B. What is the overall average attrition rate in this training course?

____ ____%

Of all the students in the course, what percent:

Graduate	____%
Are removed for poor work	____%
Elect to leave themselves	____%
Must recycle (remedial work) for graduation	____%
Leave for medical reasons	____%
Leave for other reasons	____%
	100% TOTAL

C. If your course has a recycle or remedial plan, what is the average time required for a student to go through it?

_____

D. 1. Does your training staff assess the overall efficiency of this training course?

Yes ____ No ____

If Yes, how? _____

_____

_____

2. What are the principal factors upon which your staff judges training efficiency?

_____

_____

_____

_____

_____

_____

_____

_____

3. How does your staff maximize the training efficiency of your course?

_____

_____

_____

_____

V. COST ALLOCATIONS

In this section, we wish to know how your training resources for this course are allocated to various categories. We need to arrive at an approximate total cost for the course. We have broken training costs down into six categories. Please provide as much detailed information as possible, both for direct course costs and that part of institutional overhead charged to each category.

	This Course This Year	This Course Last Year	Capital Investment re This Course
FACILITY COSTS			
Administrative Offices			
Classrooms			
Support			
Institutional Overhead			
EQUIPMENT COSTS			
Office			
Classroom			
Lab			
Instructional Aids (projectors, recorders, etc.)			
Institutional Overhead			
INSTRUCTIONAL MATERIAL COSTS			
Audio Visual (film, tape, etc.)			
Texts			
Workbooks			
Institutional Overhead			

PERSONNEL COSTS	This Course This Year	This Course Last Year	Percent of Time Per Year in Non-Course Related Activit
Administration			
Instructional			
Support			
Institutional Overhead			
CONSUMABLE SUPPLY COSTS			
Office			
Instructor			
Student			
Institutional Overhead			
STUDENT COSTS			
Wages, if students are paid (average per student)			
Travel			
Subsistance			
Medical			
Institutional Overhead			

If you charge a fee for this course, how much is it per student ? _____

If you use CAI, please indicate the annual operational cost for this course.

_____

If you use CMI, please indicate the annual operational cost for this course.

_____

I would be willing to devote up to 1/2 day for a follow-up interview early in November.

Yes_____ No _____

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